

Data Center Relocation Project



Customer Forum Series



Agenda



Welcome

David Rial, Project Communications

Project Overview

Megan Johnson, Project Director

Dependent Projects

Mike Baker, Project Chief Architect

Move Costs

Steve Rushing, DTS Deputy Director, CIO and Project Sponsor

Communications

David Rial, Project Communications

Break

Network

Mitch Howard, Networks

Mainframe Moves

Robert Jenkins, Mainframe

Questions and Answers

All



Project Overview

Megan Johnson
Project Director



Department of Technology Services



Facilities Initiative

Project Sponsor – Steve Rushing
Project Director – Megan Johnson
Chief Architect – Mike Baker



Dedicated Move Team



- MaLinda Aguilar, CWS and Change Management
- Mac Baker, Project Management Office
- Dan Calcagno, Open Systems Storage
- Rich Hall, Network
- John Helpingstine, Windows
- Mitch Howard, Network
- Robert Jenkins, Mainframe
- Norma Jimenez-Castro, Communications
- David Nahigian, Facilities
- Chris Nwakobi, Unix/AIX/Solaris
- Michael Ochoa, Communications
- Jeff Pudoff, Human Relations
- Martin Radan, Security
- David Rial, Communications
- Juvencia Romo, Procurement
- Kathleen Walsh, Project Management Office

Supported by Many Other Subject Matter Experts



Background - Why DTS is moving



- Obsolete Facilities
- Improve Security of State's Data by Geographic Separation of Sites
- Increase Adoption of Disaster Recovery



Background - Options Considered



- Upgrade Existing Cannery & South Annex Facilities
- Build New Data Center Outside of Sacramento
- Lease New Data Center Outside of Sacramento



Benefits of New Data Center



- Different Regional Threat Zone (distance from Rancho Cordova site)
- Improve Time to Recover (through data replication technology)
- Ability to Implement Disaster Recovery at Both Data Center Sites (SCMS, Service Continuity Mainframe Systems)
- Improved infrastructure, opportunities



New Facilities



- Data Center Facility
 - Focus on shorter term DR needs
 - Vacaville lease option
 - Remotely managed
 - No COEMS, no permanent staff
- Administration Site



Project Scope



...in

- Moving out of the South Annex
- Vacating the Cannery Campus
- Relocating equipment to either the new site or Gold Camp Campuses
- Occupying a new Admin Site

..out

- Expansion of Gold Camp
- Rate Development
- Other customer projects



Major Considerations



- Budget Constraints Means Lease Not Build – Negotiating for leased raised floor space in Vacaville, to be remotely managed.
- Expiring Leases
- July 2009 – South Annex
- May 2011 – Cannery
- Minimize Impact on DTS Service Delivery
- Minimize Customer Outages
- Minimize Impact on DTS Rates



Dependent Projects

Mike Baker

Chief Architect



Dependent Projects



- Remote Management
- Enterprise Storage
- Service Continuity Mainframe Systems (SCMS)
- Gold Camp LAN Upgrade
- Computer Room Space Optimization
- Tape Retirement, Media Upgrade, and Silo Decommission
- Networker Implementation (Storage Tool)



Move Preparations



- Networks must be in place
- All infrastructures (e.g., power, cabling, phone lines, etc.)
- Storage
- SRs and CRs related to the Move
- South Annex
 - Number 1 priority
 - Involves no Windows or AIX moves
 - Includes 2 CPUs, Network, and COEMS (Customer Owned Equipment Managed Services)
- Cannery
 - Involves all platforms, COEMS
 - To Gold Camp and the New Site
 - Some decommissions
- Gold Camp
 - Space Planning
 - COEMS



Timeframes

(dependent on customer migration plans)



- March 2009 – Target for lease agreement for new data center
- May 2009 – Decommission Shared Mainframe from South Annex to Cannery
- May 2009 – Vacate South Annex
- January thru March 2010 – New Site Mainframe Environment Implementation
- May 2010 – All Cannery equipment relocation complete
- May 2010 – Decommission Cannery



Move Costs

Steve Rushing
Project Sponsor



Move Cost Discussion



- Managed Services
- COEMS
- TSB Decisions
- Budget Issue



David Rial Communications



Move Efforts



Customer

- Provide Single Point of Contact for DTS
- Communicate Tolerance for Outages
- Provide resources to assist with move planning, implementation and testing
- Parallel efforts coordination and communications

DTS

- Relocate Managed Services
- Relocate Internal Applications
- Provide Customers with Consistent & Timely Communications

Joint

- Relocate COEMS Equipment at South Annex
- Plan system migrations and manage migration projects
- Test Hardware, Software & Applications



Keeping Customers Informed



- Regular Updates at Technology Services Board, AIO, CIO & Customer Council Meetings
 - Briefings at Executive Meetings with AIOs & CIOs
 - Individual Customer Meetings
 - Customer Single Point of Contact
-
- DTS Single Point of Contact - David Rial
Customer Delivery Division
David.Rial@dts.ca.gov
(916) 739-3309



Coming Events



- Next Forum February 10th, 10 AM
 - Secretary of State Multi-purpose Room
- Weekly Meetings every Thursday beginning February 19th
 - Times and Registration at:
<http://www.dts.ca.gov/calendar>



Questions & Answers



The background is a complex, dark-toned steampunk illustration. It features several large, circular clock faces with glowing golden hands and hour markers. Interspersed among these are various mechanical gears of different sizes, some with ornate, filigree-like designs. The overall aesthetic is one of intricate, vintage-inspired machinery.

Intermission



Mitch Howard,
Network

DTS Network Planning
and Migration Strategy



Network Strategy



- Vacate South Annex
- Vacate Cannery
- New Data Center
- Inventory Assets
- Identify Network Requirements
- Plan for Final Network Design
- Execute Migration Project Plans



Vacate South Annex



- COEMS Environments
 - DTS/Customer Partnership
- Local Area Network
 - Minimal Network Impact
 - No Mainframe IP Address Impact
- Inventory
 - Equipment
 - Circuits



Vacate Cannery



- Greater Complexity than South Annex
 - Core Network
 - Many Applications Impacted
- Hosted Applications
 - Includes IP Address Changes (Interplatform)
 - Move to Gold Camp and New Data Center
- COEMS
 - Relocating COEMS



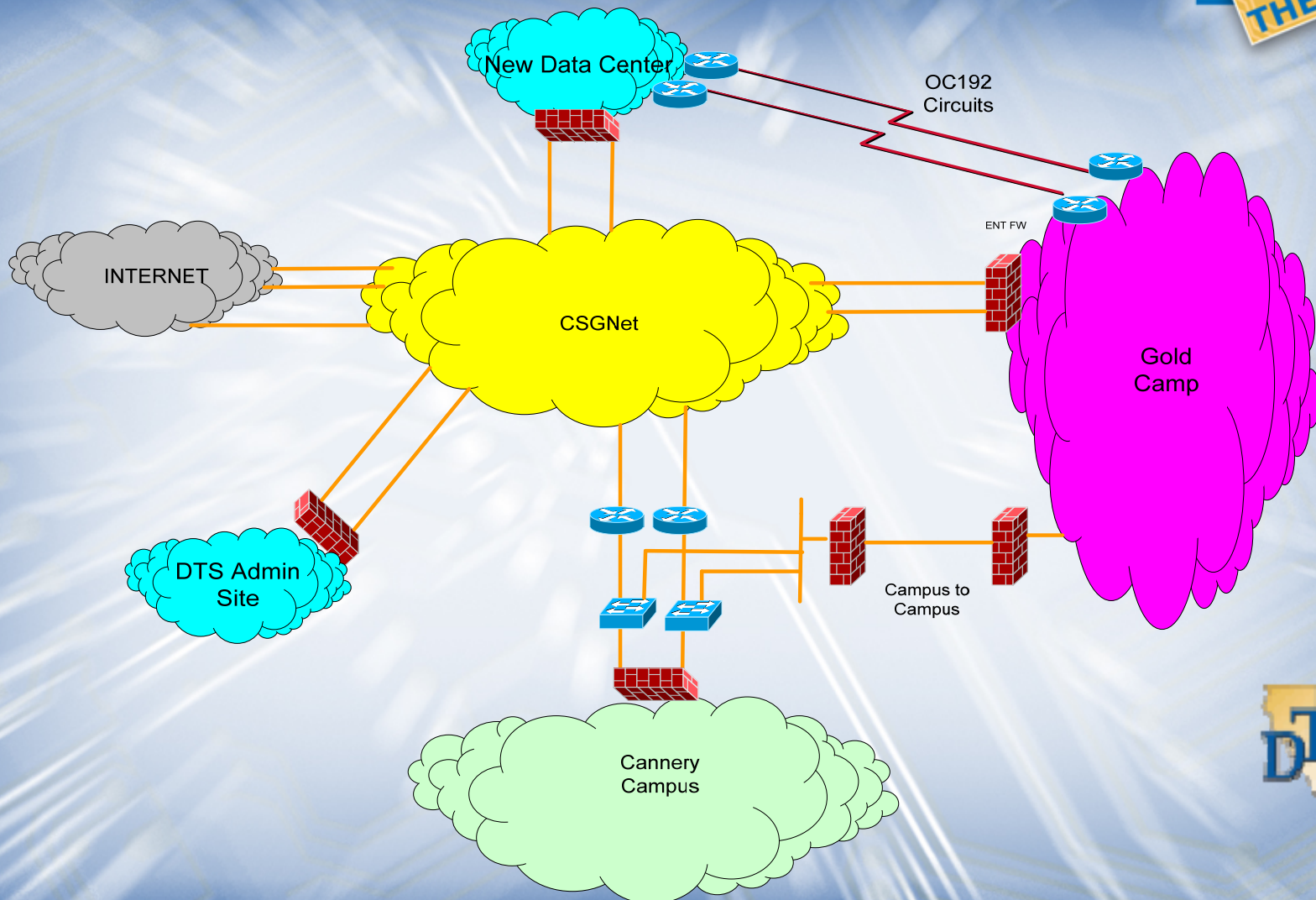
Plan New Data Center



- Planning for New Data Center
 - Identify Network Requirements
 - Data Replication
 - Logical vs. Physical Network
- Build Out Network
 - Racks and Cable
 - Network Equipment
- Support
 - Document Procedures, ITSM
 - Remote Support



DTS Network after Move



Inventory



- Physical Equipment
 - Connectivity
- Ownership
 - Customer vs DTS equipment
- Logical Design
 - Understand Dependencies
- Asset Management



Network Requirements



- Gathering Requirements
 - Meet with Customers, Internal and External
 - Deadlines per platform and/application
 - Finalizing New Data Center design mid-February
- Documentation
 - Reliability
 - Project Plan
- Identify Constraints
 - What could break?
 - Scheduling PM Windows



Final DTS Network Design



- Collaboration
 - Team Meetings and Peer Review
- Planning
 - Understanding Requirements
- Standardization
 - DTS Policies, Security, and Network Support





Robert Jenkins
Mainframe

SHARED SYSTEMS
South Annex
MOVE



Current Cannery Configuration



- Hardware in the Cannery, South Annex and Gold Camp
 - CPUs (Z1 & Z2) split between Cannery and South Annex
 - DASD (Disk Storage) split between Cannery and South Annex
 - Automated Tape Libraries (ATLs) split between Cannery and South Annex
 - Sun/StorageTek Virtual Tape System (VTS) split between Cannery and South Annex
 - Manual tape in the Cannery
 - System Consoles split between Gold Camp and Cannery



Steps to Move out of South Annex



- Tape Movement
 - 7 Steps
- DASD Movement
 - 4 Steps
- CPU Movement
 - 5 Steps
- **All hardware installation and relocation will be done by the Original Equipment Manufacturer (OEM) or maintenance provider**
- **IBM will assist with all connectivity work**



Tape Movement #1



- Implement IBM Peer To Peer (PTP) Virtual Tape System (VTS) at Cannery
 - Two independent VTSs, with any virtual volume written into one copied to the other
 - VTS to VTS communication via TCP/IP
 - Both VTSs currently in production at Gold Camp
 - One of the VTSs will be relocated from Gold Camp to Cannery and connected to the Cannery Shared Systems
 - The other VTS at Gold Camp will also be connected via Channel extension to the Cannery Shared Systems
 - This is for redundancy, in case the primary VTS at Cannery is unavailable (no single point of failure)



Tape Movement #2



- Sun/StorageTek Virtual Tape System (VTS) approaching end of life
- After the IBM VTS is installed at Cannery
 - All new VTS allocations will go to IBM VTS
 - DTS will migrate all virtual volumes from the STK VTS to the IBM VTS
 - All virtual volumes written to the Cannery IBM VTS will have a second copy written to the Gold Camp IBM VTS



Tape Movement #3



- Once all virtual volumes have been migrated out of the STK VTS, it will be varied offline



Tape Movement #4



- The STK VTS will be retired and removed



Tape Movement #5



- South Annex Automated Tape Library (ATL) will be migrated out of
 - All new tape allocations will go into the Cannery ATL or Cannery VTS
 - Most tape volumes in the South Annex ATL will pass their expiration dates and return to scratch status
 - Any remaining active tape volumes in the South Annex ATL will either be copied into Cannery ATL or Cannery VTS



Tape Movement #6



- Once all active tape has been removed from the South Annex ATL, it will be removed from service



Tape Movement #7



- After the South Annex ATL has been removed from service
 - Tape drives will be removed and re-used in other DTS ATLs
 - South Annex ATL will be disassembled and removed



DASD Movement #1



- Additional DASD (Disk Storage) will be installed in the Cannery



DASD Movement #2



- South Annex DASD will be migrated off of
 - Migration will be at the volume level and transparent to the system and applications
 - No impact to performance
 - EMC will Assist



DASD Movement #3



- After all of the South Annex DASD volumes have been migrated to the Cannery, the South Annex DASD subsystems will be varied offline



DASD Movement #4



- South Annex DASD subsystems will be de-installed
- De-installed subsystems will either be re-used elsewhere or returned to the vendor for credit



CPU Movement #1

(May 16th – 18th)



- S1S1 system will be moved to the Z2 CPU
 - Transparent to clients, except for the outages to move S1S1 and then move it back
 - TST2 Logical Partition (LPAR) will be used
 - This is done when the CPU S1S1 normally runs on is unavailable for an extended period
 - This movement will be tested at least once in April, allowing DTS and clients to validate process
 - Two (2) S1S1 outages will occur, the first at 0000-0200 on Saturday and the second at 0000-0200 Sunday
 - May 16-17, this same process will be used to allow the Z1 CPU to be relocated to the Cannery
 - Same Saturday and Sunday outages as in testing will occur



CPU Movement #2

(May 16th – 18th)



- After S1S1 system has been moved to Z2 CPU, the Z1 CPU will be powered down, disconnected from peripherals, and then disassembled
- IBM will perform this work



CPU Movement #3

(May 16th – 18th)



- Z1 CPU will be transported from the South Annex to the Cannery, re-assembled, powered up and reconnected to all peripherals
- IBM will perform this work



CPU Movement #4

(May 16th – 18th)



- CF1HWDC and TEST systems will be brought up
 - TEST system will be used to validate all peripheral connectivity to the Z1 CPU



CPU Movement #5

(May 16th – 18th)



- S1S1 system will be moved back to the Z1 CPU
 - S1S1 will be brought down normally on the Z2 CPU
 - S1S1 will then be brought up in it's normal configuration on the Z1 CPU
- TST2 system will be brought back up on the Z2 CPU
- All Cannery Shared Systems hardware removed from South Annex



Steps to Move out of Cannery



16 Steps to moving mainframes off of the Cannery raised floor to the new site.



Move from Cannery #1



- All hardware installation and relocation will be done by the Original Equipment Manufacturer (OEM) or maintenance provider
- IBM will assist with all connectivity work
- Connect Shared Systems Z1 and Z2 CPUs, via channel extension, to existing manual tape drives at Gold Camp



Move from Cannery #2



- Connect Shared Systems Z1 and Z2 CPUs, via channel extension, to Automated Tape Library (ATL) at Gold Camp



Move from Cannery #3



- Install new or redirected DASD (Disk Storage) subsystem(s) at New Site
- Implement replication from Cannery DASD to New Site DASD
 - Replication will be at the volume level
 - Replication will be asynchronous and not impact system or application performance
 - EMC will assist



Move from Cannery #4



- Install CPU (Z3) at New Site
 - Sized to replace Z1 CPU and accommodate that years growth of Z1
- Install consoles at New Site
- Install Automated Tape Library (ATL) at New Site
 - This will be a new ATL as existing DTS ATLs are approaching end of life
- Connect Z3 CPU to all New Site peripherals (DASD, consoles and ATL)
- Connect Z3 CPU to Gold Camp consoles
- Build TEST (z/OS) and CF3HWDC (Coupling Facility (CF)) LPARs
- Build TEST (z/OS) system
 - Used to validate connectivity and functionality



Move from Cannery #5



- Build S1S1 (z/OS) LPAR
- Build S1S1 (z/OS) system
 - Validate connectivity and functionality



Move from Cannery #6



- Build S2S2 (z/OS) system
 - Validate connectivity and functionality
 - Use TEST LPAR
- Halt replication (break mirror) between New Site and Cannery
 - Validate all system and subsystem functionality
 - This will be an iterative process, with replication halted and resumed more than once
- Once DTS has completed exhaustive validation and testing, client testing will be scheduled
 - Replication will be resumed to get all DASD current, then halted to allow client testing at New Site
 - This will be an iterative process, with replication halted and resumed more than once
 - There will be opportunities to test “true” network connectivity
 - Limited to 0000-0200 the 1st and 3rd Mondays of each month



Move from Cannery #7



- Re-establish DASD replication, making sure all data is current



Move from Cannery #8



- Move Shared Systems to New Site
 - Gracefully take down the S1S1, S2S2, TEST and TST2 systems
 - Halt replication to New Site
 - Redirect network connectivity from Cannery to New Site
 - No IP address or SNA/VTAM APPLID (Application identifier) changes
 - Bring up S1S1 and S2S2 on the Z3 CPU
 - Bring up all applications, as normal



Move from Cannery #9



- Power down, disconnect and disassemble Z2 CPU at Cannery
 - IBM will perform work
- Power down, disconnect and disassemble IBM Virtual Tape System (VTS) at Cannery
 - IBM will perform work



Move from Cannery #10



- Connect Z3 CPU, via channel extension, to existing IBM Virtual Tape System (VTS), Automated Tape Library (ATL) and manual tape drives at Gold Camp



Move from Cannery #11



- Transport Z2 CPU and IBM Virtual Tape System (VTS) from Cannery to New Site
- Re-assemble, power up and connect Z2 CPU to all peripherals
 - IBM will perform work
- Re-assemble, power up and connect IBM Virtual Tape System (VTS) to Z2 and Z3 CPUs
 - IBM will perform work
 - Connect New Site IBM VTS to Gold Camp IBM VTS
 - Connect Gold Camp CPUs, via channel extension, to New Site VTS
- As necessary, move any active tape cartridges from Cannery Automated Tape Library (ATL) to New Site ATL



Move from Cannery #12



- Bring up CF2HWDC system on Z2
 - Validate connectivity to Z3 CPU
- Bring up TST2 (z/OS) system on Z2
 - Validate all peripheral connectivity to Z2 CPU



Move from Cannery #13



- S2S2 system will be moved back to the Z2 CPU
 - S2S2 will be brought down normally on the Z1 CPU
 - S2S2 will then be brought up in it's normal configuration on the Z2 CPU
- De-install Cannery manual tape drives



Move from Cannery #14



- Bring TEST (z/OS) system back up on Z3
- As necessary, relocate manual tape drives from Cannery to New Site and Gold Camp
- Decommission Shared Systems Z1 CPU at the Cannery



Move from Cannery #15



- Decommission DASD (Disk Storage), Automated Tape Library (ATL) and Consoles remaining at Cannery



Move from Cannery #16



- All Shared Systems hardware removed from Cannery



David Rial Communications



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Questions & Answers

